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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/501,874

10/08/2004

Rainer Klostermann

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04/08/2008

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EXAMINER

MALEKZADEH, SEYED MASOUD

ART UNIT

PAPER NUMBER

1791

MAIL DATE

DELIVERY MODE

04/08/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/501,874	<b>Applicant(s)</b> KLOSTERMANN ET AL.	
	<b>Examiner</b> SEYED M. MALEKZADEH	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☒ Claim(s) 1-9, 12 and 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/20/2004</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the apparatus features as claimed in claims 1-8 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate

figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

Claim 2 is objected to because of the following informalities: in fourth line of claim 4, citation of "380\_C" is improper indication of "°C". Appropriate correction is required.

Claim 12 is objected to because of the following informalities: in fourth line of claim 12, citation of "60\_C" is improper indication of "°C". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitations "the batchwise" in line 4, "reactors" in line 12, "the apparatus or apparatuses" in line 14. There is insufficient antecedent basis for this limitation in the claim.

Claim 2 recites the limitation "reactors" in 2<sup>nd</sup> line of the claim 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 claims a "pipe" or "piping system" between the first reactor and the mold apparatus has a mean average diameter greater than a mean average diameter of a "pipe" or "piping system" between the first reactor and the mold apparatus in which the subject matter of the claim is unclear and indefinite because according to the subject matter of the claim 7, a mean average of the pipe diameter is greater than the mean average diameter of itself.

Claim 7 recites the limitations "the first reactor" and "the last apparatus" in 3<sup>rd</sup> line, "the flow direction" in 4<sup>th</sup> line, "the first reactor" and "the flow direction" in 6<sup>th</sup> line. There is insufficient antecedent basis for these limitations in the claim.

Claim 8 claims a "pipe" or "piping system" between the first reactor and the mold apparatus includes a mean average pipe diameter ratio of 10:1 with

itself which is unclear and indefinite for failing to particularly point out and distinctly claim the claimed subject matter.

Claim 8 recites the limitations "the first reactor" in 3<sup>rd</sup> line, "the last apparatus" and "the flow direction" in 4<sup>th</sup> line, "the last apparatus" in 5<sup>th</sup> line and "the first reactor" in 6<sup>th</sup> line. There is insufficient antecedent basis for these limitations in the claim.

Claim 9, recites "an apparatus for producing shaped bodies" in the first line. However, the subject matter of the claim recites a process with the process steps; furthermore, dependent claims 10-12 which are dependent to claim 9 provide further limitations for the process steps of claim 9. Therefore, claim 9 is indefinite and fails to particularly point out the subject matter which applicant regards.

Claim 13, recites "a process as claimed in claim 1, wherein, in step c), melt of the thermoplastic polymer is taken continuously from the piping system." in which as indicated the claim is dependent to claim 1. However, claim 1 is an apparatus claim which claims the apparatus elements and is not claiming any process steps; Therefore, claim 13 is indefinite and fails to particularly point out the subject matter which applicant regards.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 4 is rejected under 35 U.S.C. 102(b) as being anticipated by Yamamoto (JP 9-20828).

Yamamoto (JP '828) discloses a batch-type polymerization apparatus (20) for the production of polymer in which the apparatus include a polymer reactor (1) for the batch-wise preparation of a melt of thermoplastic polymer, a cooling pipe (6) as a piping system for transferring the polymer, and a pelletizer (4) as an apparatus for the production of polymeric pellets from the melt of a polymer, wherein the reactor (1) and the pelletizer (4) are connected to the piping system (6). (See figure 1; paragraphs [0009]—[0012]) Furthermore, Yamamoto (JP '828) discloses the pelletizer (4) as an apparatus for the production of shaped bodies from the melt which is a granulator.

The prior art, thus, meets all the claim limitations, and therefore Yamamoto (JP '828) anticipates the claims 1-2 and 4

Claims 1-3 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Fields et al. (US 6,224,805)

Fields et al. ('805) discloses an apparatus for formation of optical plastic sheet in a continuous fashion from molten polymer in which the apparatus

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include a source (10) as a reactor, a channel (12) as a piping system, further, an overflow die (20) and guiding means (31, 32, 33, and 34) as a shaping apparatus wherein the piping system is connected to the reactor (10) and the shaping apparatus (20) and also the piping system is located there-between and further, a delivery means (14) as a conveying device which moves the polymeric melt between the reactor (10) and overflow die (20). Furthermore, the prior art teaches the shaping apparatus (20) with guiding means (31, 32, 33, and 34) are an apparatus for producing a plastic film. (See lines 58-67, column 3; and lines 1-11, column 4; figure 2)

The prior art, thus, meets all the claim limitations, and therefore Fields et al. ('805) anticipates the claims 1-3 and 6.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.



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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (JP '828) in view of Rawlings et al. (US 4,517,138)

Yamamoto ('828) teaches all the structural limitations of batch-type polymerization apparatus as discussed above in rejection of claims 1-2 and 4, however, fail to teach the apparatus for the production of thermoplastic articles is a spinning apparatus.

In the analogous art, Rawlings et al. ('138) teach an apparatus for spin casting polymeric articles such as lenses in which the apparatus include a plurality of mold (8), a polymerization tube (2) in which an interference fit be maintained between the molds and the tube to insure concentricity of the molds to the spin axis of the tube in which spinning will cause the composition, under the centrifugal force to conform the shape of the cavity (10) in mold (8). (See 1 - 20, column 10; lines 16-24, column 13) Further, prior art discloses the spin casting apparatus produces small plastic articles with high precision and exact predetermined specifications. (See lines 39-43, column 3)

Therefore, it would have been obvious for one of ordinary skill in the art at the time of applicants' invention to modify apparatus of Yamamoto ('828) by providing a spinning device for the production of the thermoplastic articles in

order to produce small plastic articles with high precision and exacting predetermined specifications, as suggested by Rawlings et al. ('138)

Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto ('828) in view of Ishihara et al. (US 63-170402)

Yamamoto ('828) teaches all the structural limitations of batch-type polymerization apparatus as discussed above, however, fail to teach a conveying device for moving the melt, as claimed in claim 3

In the analogous art, Ishihara et al ('402) disclose a bath polymerization apparatus comprising a polymerization vessel (2), a device (a) as a conveying device for pressurizing the vessel (2) with the inert gas, an agitating element (3), a control device (6) to detect the instant passage of liquid level (L) of the polymer, and an outlet (9) as a pipe to discharge polymer G from vessel (2), wherein the inert gas is fed to a polymerization vessel (2) in such a way that under pressure, polymeric film G is discharged from the pipe (9). Further, Ishihara et al ('402) teach the batch type polymerizer apparatus as disclosed above provide an accurate control of the polymer discharge rate, and also the apparatus also provide production of a well uniform polymeric films.

Therefore, it would have been obvious for one of ordinary skill in the art at the time of applicant's invention to modify teachings of Yamamoto ('828) by providing a batch-type polymerization apparatus with a conveying device for the melt transfer in order to provide an accurate control of the polymer

discharge rate for the production of well uniform polymeric films, as suggested by Ishihara et al ('402).

Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto ('828) in view of Walter et al. (US 2,935,762)

Yamamoto ('828) teaches all the structural limitations of batch-type polymerization apparatus as discussed above, however, fail to teach the mean average diameter of the pipe between the reactor and the pipe is equal to or greater than the mean average diameter of the pipe between the mold and the pipe, as claimed in claim 7, and also the mean average pipe diameter ratio between the reactor and the pipe and the mold apparatus and the pipe is in the range from 1:1 to 10:1, as claimed in claim 8.

In the analogous art, Walter et al. ('762) teach an apparatus for forming molded sponge plastic articles in which the apparatus include a tower (14) as a reactor, which contain plastisol (14) material, conduit (18) to convey the gassed plastisol which exit the tower, Pump (19), a bypass valve (21) which is installed in line (22) to recirculate the plastisol when it is not being injected into molds, a pipe (28) to transfer the plastisol material to a mold apparatus (26), and a link air-actuated gun (27) to convey the material from the conduit (28) into the mold (26), wherein the average diameter of pipe (18) relative to pipe (28) is in a ratio 2:1. The diameter of the pipe (18) indicates the mean average of pipe diameter between the reactor and the pipe, and the diameter of the pipe (28) indicates the mean average of pipe diameter between the mold apparatus and

the pipe. Therefore, the diameter of the pipe (18) is greater than the diameter of the pipe (28) and the ratio of the mean average pipe diameter between the reactor and the pipe and the mean average pipe diameter between the mold apparatus and the pipe is in the range of 1:1 to 10:1.

Furthermore, Walter et al. ('762) teach the difference between the pipe diameters between the pipe (18) and the pipe (28) provides a pressure differential between the tower and the mold for uniform filling of the mold. (See lines 27-38, column 1)

Therefore, it would have been obvious for one of ordinary skill in the art at the time of applicants invention to modify teachings of Yamamoto ('828) by providing a piping system in which the mean average of pipe diameter between the reactor and the mold is equal to or greater than the mean average of pipe diameter between the mold and the reactor with a ratio in the range of between 1:1 to 10:1 in order to provide a pressure differential between the tower and the mold for uniform filling of the mold, as suggested by Walter et al. ('762)

Claims 9-13 are rejected under 35 U.S.C 103(a) as being unpatentable over Yamamoto ('828) in view Walter et al ('762).

Yamamoto ('828) discloses a method for producing polymeric articles by using polymers from a raw material monomer in a batch process (See abstract and paragraph [0002]) in which the process include the steps of preparing a melt of batch-wise monomers in a reactor (1) (See paragraphs [0002] and [0009] - [0010]), and also a step of feeding the melt of the thermoplastic

polymer into the piping system (6) to move the melt towards the mold. Further, Yamamoto ('828) teaches the step of introducing the melt of the polymer from the piping system into the pelletizer (4) as a mold for producing polymeric articles. (See paragraphs [0009] - [0011]) Furthermore, Yamamoto ('828) discloses the monomers which was applied to the system are hexamethylenediamine (See paragraphs [0014]) or hexamethylene dianmonium. (See paragraphs [0016]). Also, the prior art teaches the polymer is taken continuously from the piping system. (See paragraphs [0002] – [0003]) Furthermore, Fields et al. ('805) disclose the monomer is melted inside of the reactor (1) and is introduced into the piping system at the melted temperature of the monomer. (See paragraphs [0003] - [0004]).

However, Yamamoto ('828) fails to teach a mean average wall shear rate in the range of  $0.1$  to  $100\text{ s}^{-1}$  and a mean average flow velocity in the range of  $0.1$  to  $100\text{ cm/s}$  for the molten polymer.

In the analogous art, Fields et al. ('805) discloses a process for the formation of optical plastic sheet in a continuous fashion in which the process include the step of delivering the molten polymer from a source (10) to an overflow die (20) via channel (12) where it is introduced to the die (20). Further, the prior art teaches the molten plastic has a shear rate of  $10\text{ sec}^{-1}$  and a flow rate in the range of  $1.0 \times 10^{-3}$  to  $10\text{ gr/s/cm}$  which clearly suggest a flow velocity of  $0.1$  to  $100\text{ cm/s}$ . (See lines 58-67, column 3 and lines 60-67, column 5).

Therefore, it would have been obvious for one of ordinary skill in the art at the time of applicant's invention to modify teachings of Yamamoto ('828) by providing a mean average wall shear rate in the range of  $0.1$  to  $100\text{ s}^{-1}$  and a mean average flow velocity in the range of  $0.1$  to  $100\text{ cm/s}$  for the molten polymer in order to decrease the residual stress and increase the surface quality of polymeric article, as suggested by Fields et al ('805).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seyed Masoud Malekzadeh whose telephone number is 571-272-6215. The examiner can normally be reached on Monday – Friday at 8:30 am – 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin, can be reached on (571) 272-1189. The fax number for the organization where this application or proceeding is assigned is 571-272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through

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9199 (IN USA OR CANADA) or 571-272-1000.

/S. M. M./

Examiner, Art Unit 1791

/Steven P. Griffin/

Supervisory Patent Examiner, Art Unit 1791